Quantum field theory

Conjectured theory SO(6) = SO(4) x SO(2) = SU(2) x SU(2) x U(1)

Conjectured electroweak/dark energy/gravity (http://vixra.org/abs/1111.0111) symmetry theory:

SO(6) = SO(4) x SO(2)
= SU(2) x SU(2) x U(1)

If this is true, the Standard Model should be replaced by SU(3) x SO(6). or maybe just SO(6) if SO(6) breaks down two ways, once as shown above, and also as in the old Georgi-Glashow SU(5) grand unified theory (given below), where SO(6) is isomorphic to SU(4) which contains the strong force's color charge symmetry, SU(3). (See also Table 10.2 in the introduction to group theory for physicists, linked here (http://astro.sunysb.edu/steinkirch/books/group.pdf).)

Why do we want SO(6)? Answer: Lunsford shows SO(3,3) = SO(6) unifies gravitation and electrodynamics in 6d. (http://cds.cern.ch/record/688763/files/ext-2003-090.pdf)

SO(4) = SU(2) x SU(2) is well known as a mathematical isomorphism (see previous post (http://nige.wordpress.com/2014/06/21/su2-x-su2-so4-and-the-standard-model/)) as is the fact that SO(2) = U(1).

In olden times (circa 1975-84) the media was saturated with the (wrong) prediction of proton decay via the (now long failed) grand unified theory of SU(5) = SO(10). The idea was to break down SU(5) via the SO(10) isomorphism into SO(6) x SO(4), and from there one of the ideas, namely the isomorphism (based on the fact that the left force is left-handed so the Yang-Mills SU(2) model reduces to a simple single element U(1) theory for right-handed spinors): SU(2, Right) = U(1, Hypercharge). (https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0CDAQFjAD&url=https%3A%2F%2Fwww.ntu.edu.sg%2Fias%2Fupcomingevents%2Fiassppcit%2FDocuments%2FLecture%2520Notes%2FDay8_0950am_HaraldFritzsch_GrandUnification.ppt&ei=c0-0U_WTEMHaOomngOgI&usg=AFQjCNG5YJcwX8ypoYee9-dNWqx7KnAyrQ&bvm=bv.70138588,d.ZGU) may be of use to us for recycling purposes (to produce a better theory):

SU(5)
= SO(10)
= SO(6) x SO(4)
= SU(4) x SU(2, Left) x SU(2, Right)
= SU(3) x SU(2, Left) x U(1)

Well, maybe we don't need the reduction SU(4) to SU(3), but we do want to consider the symmetry break down of SO(6) because Lunsford found that group useful:

= SO(6)
= SO(4) x SO(2)
= SU(2, Left) x SU(2, Right) x U(1, Dark energy/gravity)
= SU(2, Left) x U(1, Hypercharge) x U(1, Dark energy/gravity)

This is pretty neat because it also fits in with Woit's conjecture that that shows how to obtain the normal electroweak sector charges with their handedness (chiral) features by using a correspondence between the vacuum charge vector and Clifford algebra to represent SO(4) whose U(2) symmetry group subset contains the 2 x 2 = 4 particles in one generation of Standard Model quarks or leptons, together with their correct Standard Model charges; for details see pages 13-17 together with

51 of Woit's 2002 paper, *QFT and Representation Theory.* (https://archive.org/stream/arxiv-hep-th0206135/hep-th0206135#page/n50/mode/1up)

(It's abstract but when you think about it, you're just using a consistent representation theory to select the 4 elements of the U(2) matrix from the 16 of SO(4). Most of the technical trivia in the paper is superfluous to the key example we're interested in which occurs in the table of page 51. Likewise, when you look compare the elements of the three 2×2 Pauli matrices of SU(2) to the eight 3×3 Gell-Mann matrices of SU(3) you can see that the first three of the SU(3) matrices are analogous to the three SU(2) matrices, give or take a global multiplication factor of i. In other words, you can pictorially see what's going on if you write out the matrices and circle those which correspond to one another.) (https://archive.org/stream/arxiv-hep-th0206135/hep-th0206135#page/n50/mode/1up)